

REMARKS

Entry of this amendment in accordance with the provisions of 37 CFR 1.116 is respectfully requested.

This amendment is in response to the Final Office Action mailed February 13, 2003. By the present amendment, dependent claim 2 has been amended to incorporate substantially the same language utilized in dependent claim 17 with regard to the height of the protuberant region being slightly higher than the height of the flat portion. Since both claims 2 and 17 depend on claim 1, and since the Examiner has already conducted a search regarding this feature concerning claim 17, entry of this amendment should not require any further search or substantial consideration on the part of the Examiner. Accordingly, entry of the amendment for purposes of further clarifying language of claim 2 concerning the protuberant portion is respectfully requested.

Before turning to the merits of this case, Applicants undersigned representative respectfully requests the Examiner to contact him to arrange for a personal or telephone interview following consideration of the present amendment if it is determined that the application is not in condition for allowance based upon the amendment. Applicants and the undersigned attorney greatly appreciate the Examiner's granting of this interview if it is determined that this amendment does not place the application in condition for allowance.

Reconsideration and removal of the rejection of claims 1 14, 17-19, 21-24 and 26-28 as being anticipated by Shimoishizaka and the rejection of claims 20 and 25 as being obvious over Shimoishizaka in view of Ogashiwa is respectfully requested. Essentially, in the Office Action, it is recognized that the primary reference to Shimoishizaka fails to teach or suggest the use of a stress relaxation layer formed of

a thermoplastic resin. The present invention uses a thermoplastic resin in place of the conventionally used thermosetting because Applicants have found this particularly advantageous in terms of forming the protuberant portion at the edge of the stress relaxation layer 5 (as shown, for example, in Fig. 1 and, in more detail, as the "swelling portion 34" in Fig. 9). Although the Office Action notes that on page 64, lines 21-24 of the present Applicant mentions that thermoplastic resin and thermosetting resin can both be used for the stress relaxation layer 5, it is very clear beginning with page 64, line 25 that, for purposes of forming the protuberant region 34, the thermoplastic resin is highly advantageous compared to thermosetting resin.

More specifically, page 64, line 25 et al. states:

"However, if the formation of swelling portion 34 shown in Fig. 9 etc. is taken into consideration, the use of a thermoplastic resin is preferable to the use of thermosetting resin because of difference in curing mechanism between them."

Page 65 goes on to note that, in the past, use of thermoplastic resin for a stress absorbing layer has particularly been avoided. However, Applicants' studies have determined that the previously shunned thermoplastic resin can, in fact, be highly advantageous over the previously used thermosetting material when used in conjunction with the present invention.

With regard to this, Applicants are enclosing herewith an explanation with drawings showing the differences in formation of the stress relaxation layer when thermoplastic resin is used and when thermosetting resin is used. The outcome using thermoplastic resin paste is shown on the left side of the attached sketch whereas the outcome using thermosetting resin paste is shown on the right side of the sketch. As can be seen by studying the attached sketch, when thermoplastic resin is used, a protuberant portion remains at the edges of the stress relaxation

layer. No such protuberant portions are found in the resulting product using thermosetting resin. The advantage of the protuberant portion is in helping to avoid wire breakage of overlying wires by providing extra slack so that the wire is not likely to break during deformation of the stress relaxation layer. As such, the existence of the protuberance 34 shown in Fig. 9, which is greatly enhanced by the use of thermoplastic material for the stress relaxation layer rather than thermosetting material, results in a distinct structural advantage of the overall device (i.e. prevention of wire breakage) when compared with the conventional structure.

In the Office Action, reliance is made on Applicants own disclosure, not the prior art, to support the proposed modification of Shimoishizaka to use thermoplastic resin. For example, on page 6 of the Office Action it is stated near the bottom of the page that:

"See citation above of pages and lines of the present application that suggest interchangeability of thermoplastic and thermosetting resins in the claimed device"

Page 5, line 6 et. seq. of the Office Action states:

"See page 64, lines 20+ wherein the current application specifically states that thermoplastic and thermosetting materials are interchangeable for the purpose of this invention. For at least this reason, the prior art needs not disclose whether the material used is thermoplastic or thermosetting."

Applicants respectfully traverse this reliance on Applicants' own disclosure for the reasons set forth below.

1. The Applicants' disclosure clearly indicates that thermoplastic resin is advantageous over thermosetting resin.

As noted in the foregoing discussion, although page 64, lines 20-24 notes that both thermosetting and thermoplastic resin could be used for forming the stress

relaxation layer 5, beginning with page 64, line 25 et. seq. it is clearly set forth that thermoplastic resin is advantageous as compared with thermosetting resin if it is intended to form the swelling portions 34 (that is, the claims protuberant portions) such as shown in Fig. 9. Therefore, it is respectfully submitted that it is not appropriate to rely on a general statement made in the specification that either thermosetting or thermoplastic material could be used while completely ignoring the fact that the specification goes on to set forth a clear advantage to using thermoplastic resin instead of thermosetting resin. The present invention is directed to claiming the advantageous use of thermoplastic resin, and, this advantageous structure is clearly discussed as being advantageous in the specification. Therefore, it is respectfully submitted that the portion of the specification (that is, page 64, lines 20-24) is quoted out of context and inappropriately relied on to justify a modification in the prior art which fails to in any way suggest the use of thermoplastic material itself.

2. The statement made in the specification is not an admission of prior art, and, as such, is not appropriate for use in a rejection

Although page 64, lines 20-24 discuss the general possibility of using either thermosetting resin or thermoplastic resin for the stress relaxation layer, there is nothing in the discussion which suggests that the prior art in any way recognized interchangeability of both materials. Indeed, the discussions on pages 65 and 66 of the specification clearly indicates that the prior art taught directly away from using thermoplastic resin in place of thermosetting resin since it was believed to be inferior. Therefore, nothing in the present specification represents an admission regarding prior art which could be used in formulating a rejection. And, as noted above, the

present specification clearly teaches that the Applicants have discovered that thermoplastic resin is advantageous over thermosetting resin in terms of forming a protuberant region such as defined in a number of the present claims. Therefore, for these reasons as well, it is respectfully submitted that the use of Applicants' disclosure in attempting to formulate a rejection is clearly inappropriate.

3. Under current case law, the prior art itself must provide the necessary motivation for modifying a reference, which, in the present instance, is not the case.

The case of *Ex parte Gerlach*, 212 USPQ 471 (Bd. of App 1980) clearly indicates that motivation for making a modification to what is taught in a reference must come from the reference itself. In the present Office Action, an attempt is made to ignore the shortcoming of the reference in not teachings thermoplastic material by relying on a general teaching of using either thermoplastic or thermosetting material set forth in the present specification. However, as noted above, the use of this general statement in the Applicants' specification is out of context and clearly inappropriate since it completely ignores the fact that the present claims are directed to the advantageous use of thermoplastic resin, as clearly set forth in the specification. Therefore, it is respectfully submitted that the teachings of *Ex parte Gerlach* requiring motivation to be found in the reference itself for modifications of the reference has not been met in the present rejections.

Similarly, as recognized by the CAFC in the recent case of *In re Lee*, 61 USPQ 2d 1430 (Fed. Cir. 2002):

"The patent examination process centers on prior art in the analysis thereof. When patentability turns on the question of obviousness, the search for an analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness." 61 USPQ 2d at 1433.

The case of *In re Lee* goes on to state:

"The need for specificity pervades this authority ...particular findings must be made as to the reason the skilled artesian with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed."

Still further, *In re Lee* states:

"Board of Patent Appeals and Interference improperly relied on "common knowledge and common sense" of persons of ordinary skill in the art defined invention of patent application obvious over combination of two prior art references, since factual question of motivation to select and combine referenced material to patentability, and could not be resolved on subjective belief and unknown authority."

It is, of course, noted that the case of *In re Lee* pertained to a rejection based on obviousness under 35 U.S.C. § 103. However, it is respectfully submitted that this case applies in the present instance since the rejection under 35 U.S.C. § 102(e) of a number of the claims as being anticipated by Shimoishizaka is inappropriate since Shimoishizaka clearly lacks a specific teaching of using thermoplastic material for the stress relaxation layer. In order to meet the present claims, one would have to modify the stress relaxation layer of Shimoishizaka to utilize thermoplastic resin since the reference fails to teach this. The Office Action utilizes Applicants' own disclosure for this suggestion, and, as such, sets forth an obviousness type rejection based on modifying the primary reference utilizing the Applicants' own disclosure. It is respectfully submitted that this modification is inappropriate for the reasons set forth above. Therefore, looking at the only actual prior art cited by the Examiner (that is, Shimoishizaka and Ogashiwa), these references fail to provide the necessary evidence required by the case of *In re Lee* to meet the requirements for an obviousness type rejection.

In summary, as discussed above, the present claimed invention specifically defines the use of thermoplastic resin material which is not taught by the Shimoishizaka reference and which has a distinct advantage over conventionally used thermosetting resin. The advantages of thermoplastic resin over thermosetting resin are clearly discussed in the specification. No prior art has been cited which suggests the substitution of thermoplastic resin for thermosetting resin within the context of the claim structure. The use of Applicants' own teachings regarding the possibility of this substitution is clearly inappropriate inasmuch as the specification goes on to clearly state that thermoplastic resin is highly advantageous over thermosetting resin when one considers the formation of the claimed protuberant portions. Therefore, it is respectfully submitted that all of the claims presented in the present application clearly define over both Shimoishizaka and the combination of Shimoishizaka and Ogashiwa, and reconsideration and allowance of claims 1-14 and 17-28 is respectfully requested.

Regarding statements made in the Office Action concerning ignoring claimed limitations as being directed to product by process limitations, it is respectfully submitted that this is inappropriate for the reasons discussed below.

To begin with, it is noted that the claim language in question concerns the use of thermoplastic resin as opposed to thermosetting resin. This is a material distinction rather than a distinction in terms of process steps. The difference in the final product in terms of using a thermoplastic resin or a thermosetting resin is a significant difference since, as discussed above, the end product will have a clearly defined protuberant region if thermoplastic resin is used, whereas it will not have this protuberant portion if thermosetting resin is used. The protuberant portions give a

distinct advantage to the resulting product, as discussed above. Therefore, it is respectfully submitted that all claim language concerning the use of thermoplastic resin must be considered in the present instance since it is directed to the resulting product rather than a specific process for forming the resulting product.

Beyond this, even if one were to consider any of the claim language as being process language, as stated in the case of *In re Luck*, 177 USPQ 523 (CCPA 1973):

"Product claims may include process steps to wholly or partially define claimed products; to the extent these process limitations distinguish product over prior art, they must be given same consideration as traditional product characteristics."

As discussed above, the use of thermoplastic resin in the present invention results in a product which distinguishes over the prior art by the formation by the improved protuberances compared to products obtained using thermosetting resin. Thus, any limitations regarding the use of thermoplastic resin, even if such limitations were considered to be process limitations, must be considered under the teachings of the *In re Luck* decision. Therefore, consideration of all claim language in this matter is respectfully requested.

As a final point, it is noted that a number of the present claims, such as claims 3-6, specifically define particular temperatures and coefficients of thermal expansion for the material in question. It is respectfully submitted that these are not inherent features, but particular design considerations utilizing thermoplastic resin for purposes of obtaining an improved product in accordance with the present invention. As noted above, nothing in Shimoishizaka even suggests the use of thermoplastic resin at all. Therefore, it is respectfully submitted that there is no evidence to meet the claim limitations as to specific temperatures and thermal expansion coefficients concerning the thermoplastic resin, and it is inappropriate under the teachings of the *In re Lee*

case to suggest that these are inherent or common knowledge. Therefore, particular consideration and allowance of these claims is also respectfully requested.

If the Examiner believes that there are any other points which may be clarified or otherwise disposed of either by telephone discussion or by personal interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The changes are shown on the attached pages, the first page of which is captioned "Version With Markings To Show Changes Made."

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 500.39919X00), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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Attachments: Version With Markings To Show Changes Made
Explanation with drawings

ATTACHMENT

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claim 2 as follows:

2. (Twice Amended) A semiconductor device according to Claim 1, wherein a protuberant portion is formed in a surrounding part connected to the inclined edge portion of the stress relaxation layer, said protuberant portion having a height which is slightly higher than a height of flat portion of the stress relaxation layer, and a deflected portion is formed in the wiring existing on said protuberant portion.